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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/756,997      | 01/08/2001  | Caroline Boulenger   | FR919990065         | 6885             |

7590 06/19/2002  
Joseph P. Abate  
Intellectual Property Law  
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EXAMINER

PIERRE, KENELT

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2822

DATE MAILED: 06/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/756,997

Applicant(s)

BOULENGER, CAROLINE

Examiner

KEN PIERRE

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1 to 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 to 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. This office action is in response to the application filed January 8, 2001.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 to 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al (6,372,408) in view of Danh et al (5,983,907) and further in view of Wedding Sr. et al (5,793,158)

Regarding claims 1 to 12, Lu et al disclose (ABSTRACT) a method of reducing post-development blob defects on wafer. (Col. 2; lines 5 to 20) he semiconductor wafer has a photoresist formed thereon. The resist is exposed, baked or heated and developed in deionized water. (Col. 5; lines 1 to 10) Deionized water is use instead of developer water solution for performing multiple rinse cycles.

However, Lu et al do not disclose the temperature or the temperature range of the different rinse cycles of the deionized water and the temperature of the bake.

Danh et al (ABSTRACT) disclose a method of drying silicon wafers using hot deionized water at various temperatures. (Col. 2; lines 20 to 30) The temperature of the DI bath can be maintained at different temperature ranges: 50 degrees C to 70

degrees C, 30 degrees to 70 degrees C, 80 degrees to 85 degrees C. (Col. 5; lines 10 to 40) These different temperatures improve the productivity of the process and maintain a high quality of processing result. (FIG. 10 and 11) Point out that the particles level seems to go down above room temperature. This is due to the fact that chemical solubility of compounds is increased in solvent at elevated temperature.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use deionized water heated at different temperatures to rinse the wafer without first cooling it. (Col. 5; lines 35 to 45) because the elevated temperature solvent has higher solubility and produce a lower level of blob defects or particle on the wafer, as taught per Danh et al reference.

Furthermore, it is understood to elevate the temperature of the deionized water the system must be equipped with a heating device.

Wedding Sr. et al disclose (Col. 1; lines 10 to 15) the invention related to a gas discharge plasma display. (Col. 17; lines 18 to 15) After exposure the photoresist is developed. (Col. 18; lines 35 to 40) The wafer is then hard baked or heated at temperature of 220 degree F or about 104 degrees C after the exposure and the development of the photoresist.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to hard bake or heat the wafer at temperature of 220 degree F or about 104 degrees C after the exposure and the development of the

photoresist, because the hard bake improve the adhesion of the photoresist , as taught per Wedding et al references (Col. 18; lines 35 to 40).

### ***Conclusion***

3. **THIS ACTION IS MADE NON-FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this non-final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this non-final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this non-final action.

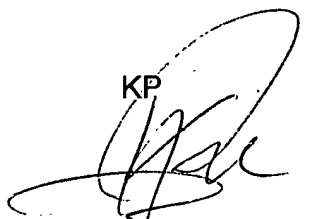
4. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Ken Pierre whose telephone number is (703) 305-4002. The examiner can normally be reach on Monday-Friday from 8:30AM to 5:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Carl Whitehead, Jr. can be reach at (703) 308-4940. The fax telephone

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numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or processing should be directed to the receptionist whose telephone number is (703) 308-0956.

KP  
  
June 4, 2002

  
CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800